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## Cow Size, Perhaps More Than Just A Production Efficiency Decision

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# CORNHUSKER ECONOMICS

UNIVERSITY OF  
**Nebraska**  
Lincoln

December 3, 2008

University of Nebraska–Lincoln Extension

Institute of Agriculture & Natural Resources  
Department of Agricultural Economics  
<http://www.agecon.unl.edu/Cornhuskereconomics.html>

## Cow Size, Perhaps More Than Just A Production Efficiency Decision

Market Report	Yr Ago	4 Wks Ago	11/28/08
<b><u>Livestock and Products,</u></b>			
<b><u>Weekly Average</u></b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.....	\$95.39	\$91.24	\$90.00
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. ....	117.25	103.94	105.99
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. ....	*	98.76	96.54
Choice Boxed Beef, 600-750 lb. Carcass. ....	150.65	142.06	153.20
Western Corn Belt Base Hog Price Carcass, Negotiated. ....	51.36	54.92	53.79
Feeder Pigs, National Direct 50 lbs, FOB. ....	47.62	45.04	55.00
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean. ....	59.57	63.49	57.50
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct. ....	90.13	*	97.62
National Carcass Lamb Cutout, FOB. ....	263.47	262.55	259.78
<b><u>Crops,</u></b>			
<b><u>Daily Spot Prices</u></b>			
Wheat, No. 1, H.W. Imperial, bu. ....	8.31	4.86	4.91
Corn, No. 2, Yellow Omaha, bu. ....	3.74	3.91	3.54
Soybeans, No. 1, Yellow Omaha, bu. ....	10.22	9.11	8.74
Grain Sorghum, No. 2, Yellow Dorchester, cwt. ....	6.71	5.30	4.41
Oats, No. 2, Heavy Minneapolis, MN, bu. ....	2.83	*	2.15
<b><u>Feed</u></b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. ....	135.00	202.50	202.50
Alfalfa, Large Rounds, Good Platte Valley, ton. ....	*	77.50	77.50
Grass Hay, Large Rounds, Premium Nebraska, ton. ....	85.00	75.00	75.00
Dried Distillers Grains, 10% Moisture, Nebraska Average. ....	141.50	148.50	133.00
Wet Distillers Grains, 65-70% Moisture, Nebraska Average. ....	45.50	49.50	43.00
<b>*No Market</b>			

In *Cattle Today*, an online beef producer's magazine, a February 7, 2008 article titled "Preconditioned Calves Give Premium At Market" contained this statement, "We're weaning calves bigger and younger than we ever have. Many calves now weigh 600 to 700 pounds at weaning, whereas 20 or 30 years ago a yearling would weigh 600 to 700 pounds."

(<http://www.cattletoday.com/archive/2008/February/CT1411.shtml>).

If you asked experts in the beef industry, you would probably get many different answers as to why calf size has increased. Some of the factors that probably have had an influence in increasing size include a better understanding of nutrition and health, as well as gains in genetics and management. Interestingly, this same periodical that cheered calf size as a contributor of profitability has also declared war on cow size. The following excerpts are from an April 10, 2008 article titled "Optimum Cow Size Important For Efficiency." "Over the past several decades the average cow on many ranches has increased in frame size, and in recent years some stockmen are realizing that their cattle have become too large to be efficient." And "When we consider cow efficiency, a smaller cow will always have an advantage over a bigger cow. Smaller cows can do more for less. If your ranch can support 100 head of 1,400 pound cows, it will support 120 head of 1,100 pound cows – on the exact same inputs. That's 20 percent more cows producing 20 percent more calves – and I guarantee those 120 smaller cows will always produce more total pounds of beef than the 100 larger cows. On top of that, the calves out of the smaller cows (because they have smaller individual weights) will be worth more per pound." <http://www.cattletoday.com/archive/2008/April/CT1515.shtml>

Where are the data that support the assertion of more total calf weight? If you assume the same 1,400 lb. cows wean a 650 lb. calf and the 1,100 lb. cows wean a 525 lb.



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calf, the larger cows wean 2,000 pounds more calf. However, to quibble over the biology is not the intent of this article, but rather to introduce real world economics into the discussion of optimal cow size.

Beef producers operate under various types of circumstances and have differing resources and managerial skills, so there will likely never be one optimal cow size, but a range of sizes for different operations and circumstances.

The discussion here is limited to several key economic influences in the discussion about optimality. The intent is to introduce institutional (the way things are done) factors that might influence cow size, that have not been as widely discussed in the cow size debate.

While much of the talk about cow size is directed at production efficiency, nothing is really applied to the profitability of the ranch as a whole, given the institutional environment the business operates in. Let's pursue this idea further with a specific example.

One of the largest costs incurred in raising cattle is feed cost. In the case of cow-calf operations, that would be the cost of harvested forages and grazed ranges and pastures. Many operations own a portion of their land but few own it all, with some producers owning none or very little of it. In many cases, pasture is rented based on the number of head, or number of cow-calf pairs on the pasture, and not on the amount of feed required by these cattle. For those ranches whose cattle graze public lands, the rental rate is per cow-calf pair and no adjustment is made for cow size.

Since the size of the cow may have no effect on the cost of the pasture or range and since larger cows wean larger calves, larger cows would be preferred to smaller cows. The economic implication is that maximum pounds of weaned calves for the least possible cost maximizes profit. If the renter pays the same pasture cost for an 1,100 pound cow and calf as for a 1,400 pound cow and calf, but the 1,400 pound cow weans a larger calf, then at least in pasture costs, the heavier cow is more profitable.

This is a crude analysis and leaves out many other facts that could be used to argue otherwise. The point however is simple and straight forward; as long as size is even partially disconnected from cost, larger sized cows will have an economic advantage. In a perfect world land owners would charge rent according to the weight of each cow, allowing the renter to pay closer attention to actual efficiency relative to cow size.

Some other factors to consider that are not associated with cow production efficiency include the demand for a specific calf size, and the overall demand for beef as a protein source. The decision to produce a specific size calf is not strictly a choice based on production cost, but

includes the other half of the market, demand for the calves and beef.

In the supply chain for beef, processors have recognized that the more beef contained in a single carcass, the greater potential for reduced production cost. The time and cost to process a single carcass is about the same regardless of its size. This fact gives a cost advantage to larger animals, making their cost per pound to process less. Given the number of animals processed at large processing plants, a small advantage becomes a big savings.

Additionally, those retaining cattle ownership in feedlots have a similar dilemma; the yardage cost is on a per head basis. Furthermore, larger framed cattle tend to gain more rapidly in the feedlot and can be harvested at heavier weights without being over finished. As long as the cost of adding that extra weight is less than the cost of gain, there is an economical advantage to feeding cattle to heavier weight. That is why carcass weights have increased over the last several years. The heavier cattle return more dollars.

The foregoing information explains at least in part why cows have gotten larger and will likely remain large. The idea that optimal size is not strictly a production issue needs to be recognized by those only focusing on efficiency. Considerations for economic (institutional and otherwise) effects need to be part of any analysis to make sure that profitability is not compromised if a smaller cow size is adopted.

Pure biological efficiency and economic optimum are generally not the same, and should never be confused with each other. The statement that increasing efficiency always increases profitability is not true. It is always prudent to understand which efficiency you are measuring and under what economic constraints and conditions you are producing.

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